

Micro INSTRUMENTS

ELECTRONIC DEVELOPMENT

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Innovative Electronics for a Changing World

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MODELS :

12-48Vdc / 30 Amp charge sense / 30 Amp Load sense

12-48Vdc / 100 Amp charge sense/ 30 Amp Load sense

NETWORK POWER MONITOR R9 / NPM-R9

SNMP+TFTP
+ GSM

1 SYSTEM DESCRIPTION

Main Board



Relay Board



GSM Board



The NPM-R9 (NETWORK POWER MONITOR R9) was designed to assist Network and Wireless Network specialists with Power related information via Ethernet and **GSM** Communication.

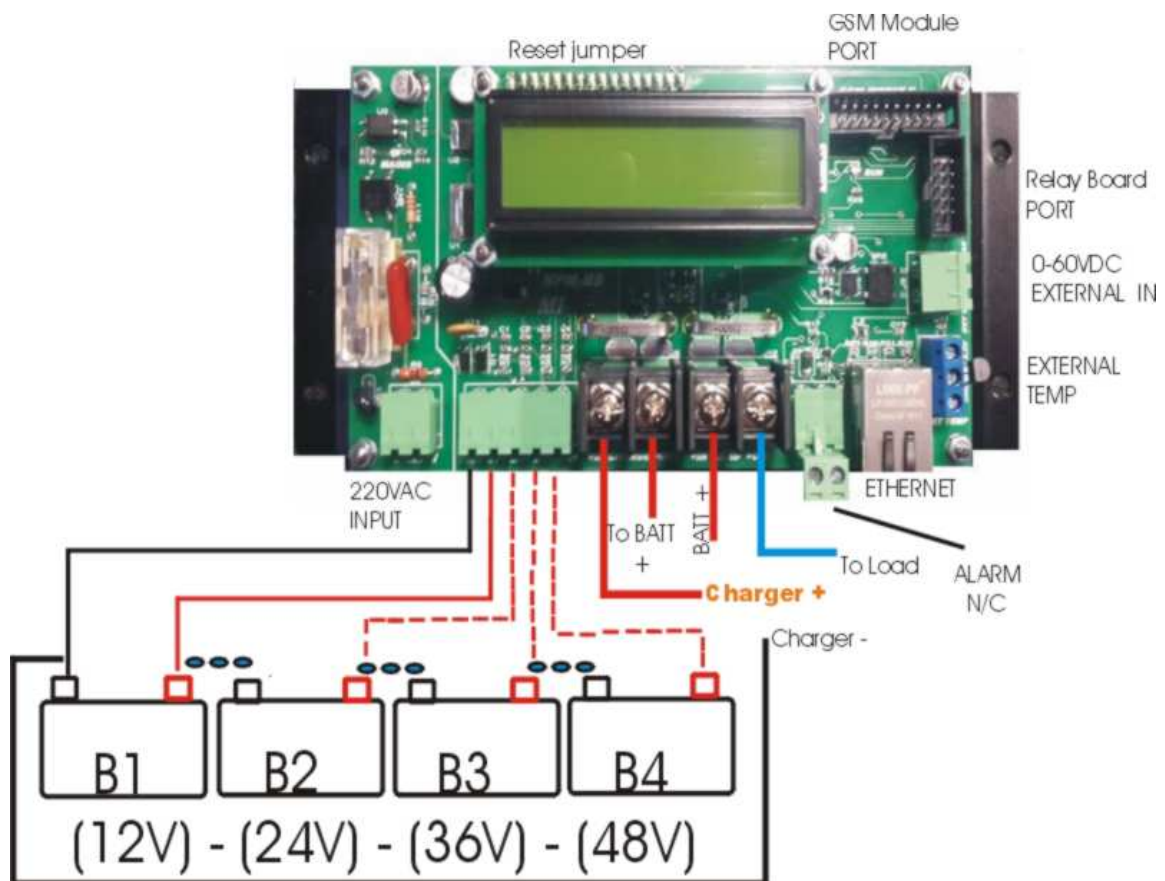
Battery Voltage, **Charging** Current, **Load** current to equipment, **Mains** 220Vac Status, 1x **External dc input** voltage, **Alarm** input and **temperature** information is available.

Embedded Web pages for monitoring and configuration of the system.

The unit supports the **SNMP V1** and **SNMP V2C** communication platform to be compatible with SNMP monitoring software platforms.

The NPM-R9 is powered by C language firmware and the code was written to function as a co-operative RTOS.(Real time operating system)

2 BOARD CONNECTIONS

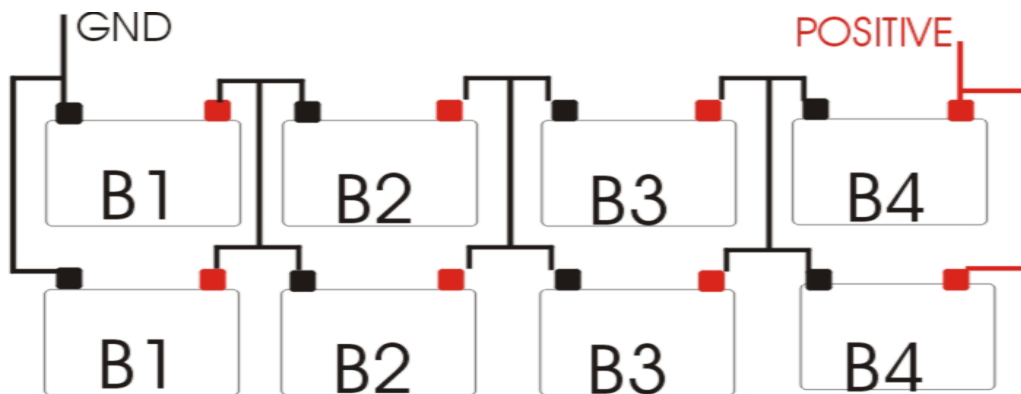


Factory Reset jumper – insert jumper –power up and wait until green led top left corner of Main board flash once.

External Temperature sensor can be extended with 3 wires

Alarm input – potential free contact only.

3 CONNECTION DIAGRAM of series/parallel Batteries



Correct series/parallel connection of Batteries

Battery and Charger connection

Connect GND (-) of the Battery system to the left hand side terminal marked "GND"

The system will operate from 12 , 24 , 36 or 48V battery voltages

Connect the first battery (+12v) of the pack to Terminal " B1+"

Connect the second Battery (+24v) to Terminal "B2+"

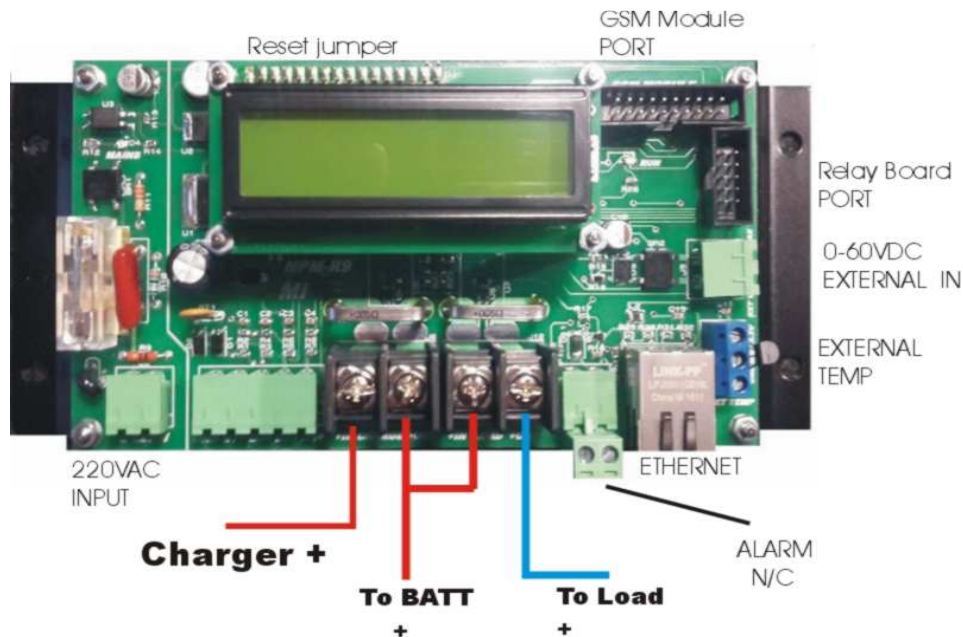
Connect the Third battery (+36v) of the pack to Terminal " B3+"

Connect the Fourth Battery (+48v) to Terminal "B4+"

Connect The Charger + to the Charge terminal marked "Charger+ IN"

Connect the terminal marked "+Charger out" to your batteries

3 CONNECTION DIAGRAM



The current feed through for “LOAD” current is a totally isolated current port from the Charge current port

If the load to the equipment is coming from the Battery pack then **Charge +** out can be bridged directly to “**LOAD IN +**”

“LOAD OUT + ” will go to the main power feed point of your equipment

V1 External Vdc input can be used to monitor eg. DC-DC converters or Solar Panels.

The external 0-60Vdc input is polarity protected on the board and the customer can wired + and – for the input in any way.

The input is protected by a 72V TVS diode for spikes and over voltage

The Battery power input and 220Vac Mains input is protected against surge and over voltage

4 GSM module and functions



The NPM-R9 GSM module interfaces to the main board via a 20way ribbon cable and no other connections necessary.

The 4 way dip switch on the pcb allows the user with the following

Switch 1 – (ON) – SMS will be send if mains fails and when mains returns

Switch1 – (OFF) – NO SMS will be send regarding mains status

Switch 2 – (ON) – SMS will be send if the Alarm input goes open circuit

Switch2 – (OFF) – NO SMS will be send regarding Alarm status

Switch 3 – (ON) – SMS will be send if Battery volts falls below a certain level, Auto calculating (11.5V for 12v system)- (23.0V for a 24V system) – (33.5V for a 36V system) and (46.0V for a 48V system)

Switch 3 – (OFF) – NO SMS will be send regarding Battery status

Switch 4 – (ON) – SMS will include the status of Relay 4 and Relay 5 if on or off

Switch 4 – (OFF) – SMS will not include Relay status in the message

Setup of GSM module

Insert a SIM card and install the reset jumper for the first time , power the NPM-R9

After about 10 sec remove the Reset jumper(all number cleared)

Notice the STATUS led will glow and the NETWORK led will flash at a fast rate

After about 8 sec if the unit finds a Network connection the NETWORK led will start to blink slowly.

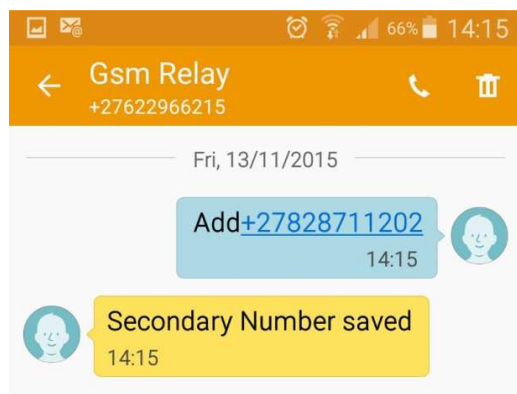
Wait about 30 sec before sending an sms

Send a text message “ **Save**” to the units number to save your number as the Primary control number



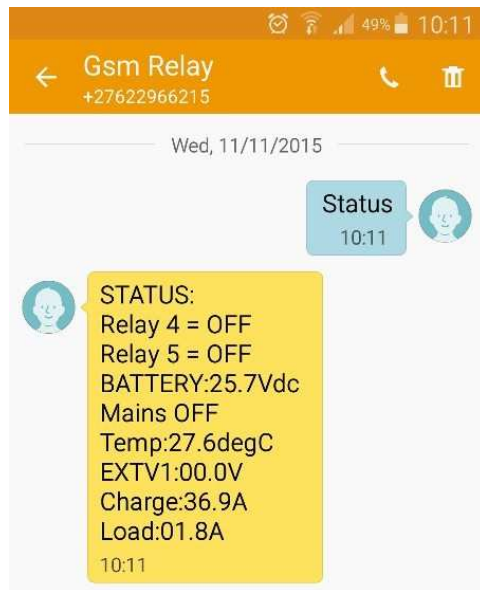
The unit will reply with “Primary number saved”

Send a text message “**Add+2782.....**”(secondary number on the system) to the unit to save the secondary number



Unit replies with “Secondary number saved”

Send a text message “**Status**” to enquire the status of the unit



Send a text message “**R5on**” to switch Relay 5 to the on position



Send a text message “**R5off**” to switch R 5 to the off position

The unit will reply with a **Relay 5** off message

Send a text message with “**R4on**” to switch Relay 4 to on position

Send a text message “**R4off**” to switch R 4 to the off position

The unit will reply with a **Relay 4 off** message

*****Only Relay 4 and 5 can be switched to stay in the on or off**

*****position – Relay 1,2 and 3 is for reset purposes only**

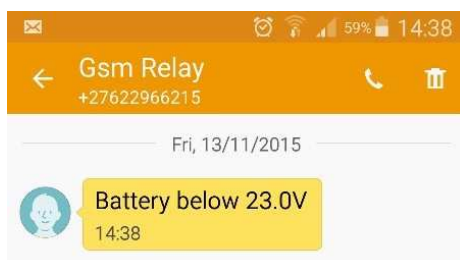
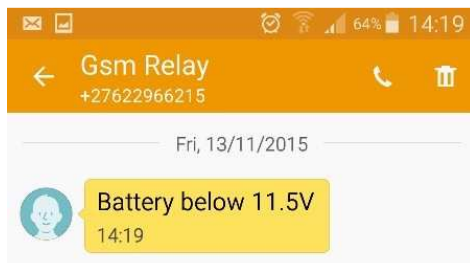
Send a text message **"R1"** to reset relay 1



Relay 1 will energize and after 10sec the relay will de- energize

Follow the same procedure for Relay 2 and Relay 3 with "R2" and "R3"

Should the LOW Battery function be enabled on the GSM dip switch an automatic Battery low sms will be send as soon as the Batteries fall below a certain level



SMS will also be send at 34.5V for a 36V system and at 46.0V for a 48V Battery system

Use the “**Erase**” text message from the original number to remove the primary number and send “**save**” from the new primary number to the unit

Use the “**Wipe**” text message to remove the secondary number and send “**add+27.....**” for the new secondary number to the unit if needed.

5 START UP

By default the unit is shipped with a default IP address of

192.168.1.2

Micro Instruments Network Power Monitor R9 will be display where after the current TCPIP stack version will be displayed.

192.168.1.2 will appear on the LCD as the default IP address.

Connect to the IP address via a web browser (Tested Google Chrome and Internet Explorer) to access the web pages.

To Factory reset the unit, install the jumper provided over both pins behind the LCD display, power the unit, Display will show model number etc and then go blank, notice the run led close to the jumper J9 will give one flash as soon as the board is restored to factory settings. Cycle the power to the board to initiate a restart.

Micro Instruments registered private enterprise number (PEN) 45501

To login to the Relay control page , Network settings or SNMP configuration pages the following passwords must be used.

admin

microi

5 HOME PAGE



Home Page

Status

Relay Control

Network Configuration

SNMP Configuration

NPM R9

Stack Version: v5.36

Build Date: Nov 13 2015 serial # Mi-00003

Charge sense: 30Amp

Load sense: 30Amp

Relay's 5 - 1

Module Heartbeat

Inputs:
^ ^ V V

Battery Voltage: 51.12V

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The Stack version is displayed, the build date of the firmware programmed on to the device, the units serial number as well as the model number.

Charge sense and Load sense maximum Amps the unit can measure is also displayed, a **100Amp charge** and **30Amp Load** model is also available.

A visual indication of the status of Relays 5 to 1 is given and indicated by a green dot if the relay is active (powered)

A “module heartbeat” indication by a green dot flashes once per second as the software runs through the TCPIP applications.

Only inputs 1 and 2 is functional, and indicated by a ^ for inactive and V for active, inputs 3 and 4 is for future expansion.

AJAX Battery voltage measurements is displayed for quick information regarding battery voltage.

Left hand menu will navigate to different applications on the unit.

6 STATUS PAGE



Home Page
Status
Relay Control
Network Configuration
SNMP Configuration

Network Power Monitor

STATUS

build date of the HEX file programmed and serial number:.

Nov 13 2015 serial # Mi-00003

External Temperature sensor in Degrees Celcius:.

25.2D

External Voltage 1 input:.

00.0V

Battery 1 Volts(12V):.

13.11 V

Battery 2 Volts(24V):.

12.30 V

Battery 3 Volts(36V):.

12.89 V

Battery 4 Volts(48V):.

12.70 V

Current LCD Display image:.

B: = Battery Voltage
I: = Charge Current to Battery
i: = Load Current to Equipment
Mains: = 220Vac input Status on/off
Load current reading will be replaced with "ALARM !" if active

B:51.3 V I:00.0A
MAINS:OF 1:00.0A

Manufacturing date and serial number is displayed.

External temperature sensor is displayed in degrees Celsius.

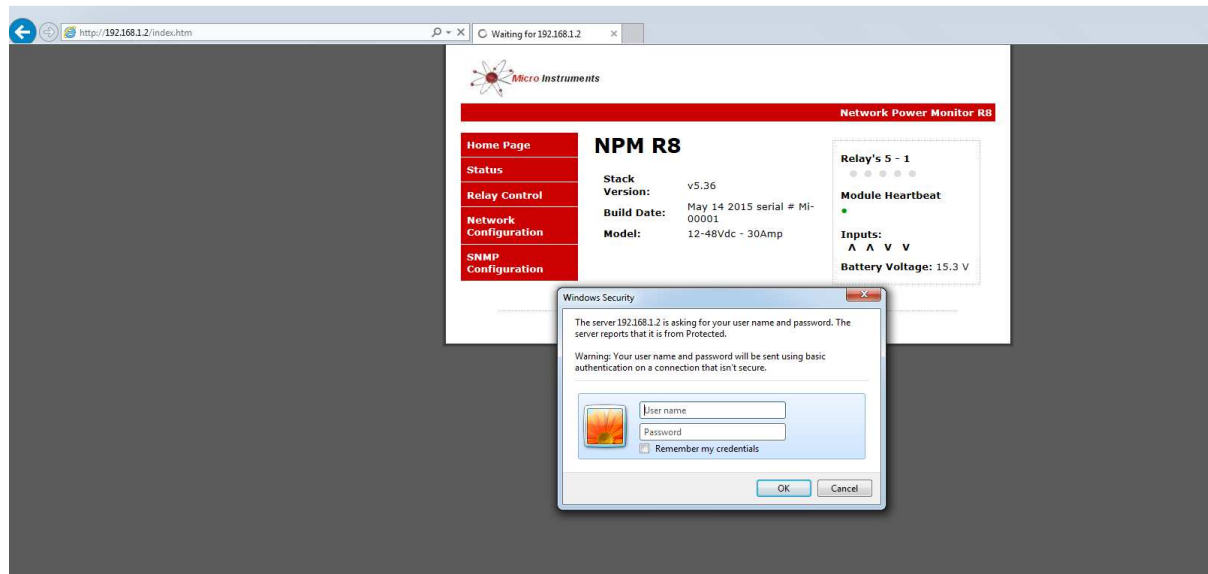
External Voltage input V1 is displayed as 0 to 60Vdc

Battery 1 to 4 Voltages is given separately from each other - if all connected

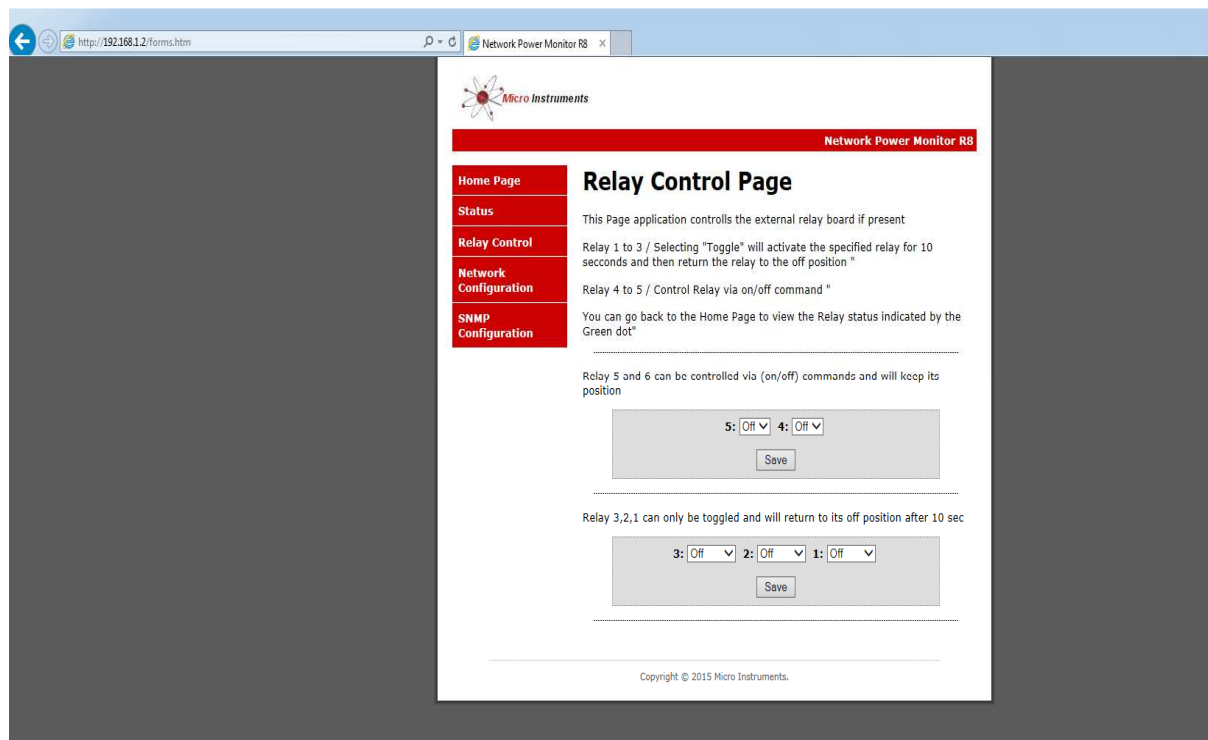
A reflection of the module's LCD display is captured and displayed on this page

Battery voltage , charge current , Mains status on or off and the Load current .

7 RELAY CONTROL PAGE



Admin and microi gains access



Relay 5 and 4 can be controlled to the on/off status and will keep their positions, Relay 3 to 1 can only be toggled for 10 second periods and is typically used to reset radios or routers without logging yourself out completely from the remote site after a relay was accidentally switched , relay 3 to 1 will return automatically after 10 seconds to the off position (relay not powered)

8 NETWORK CONFIGURATION PAGE

The screenshot shows a web browser window with the address bar displaying `http://192.168.1.2/protect/config.htm`. The page title is "Network Power Monitor R8". The left sidebar contains a menu with the following items: Home Page, Status, Relay Control, Network Configuration (highlighted), and SNMP Configuration. The main content area is titled "Board Configuration" and includes a description: "This page allows the configuration of the board's network settings." A red warning box states: "CAUTION: Incorrect settings may cause the board to lose network connectivity." Below this, a prompt says "Enter the new settings for the board below:". The configuration form contains the following fields: MAC Address (00:19:F6:00:1A:1F), Host Name (NPM-R8), IP Address (192.168.1.2), Gateway (192.168.1.1), Subnet Mask (255.255.255.0), Primary DNS (192.168.1.1), and Secondary DNS (0.0.0.0). A "Save Config" button is located at the bottom right of the form. The footer of the page reads "Copyright © 2015 Micro Instruments."

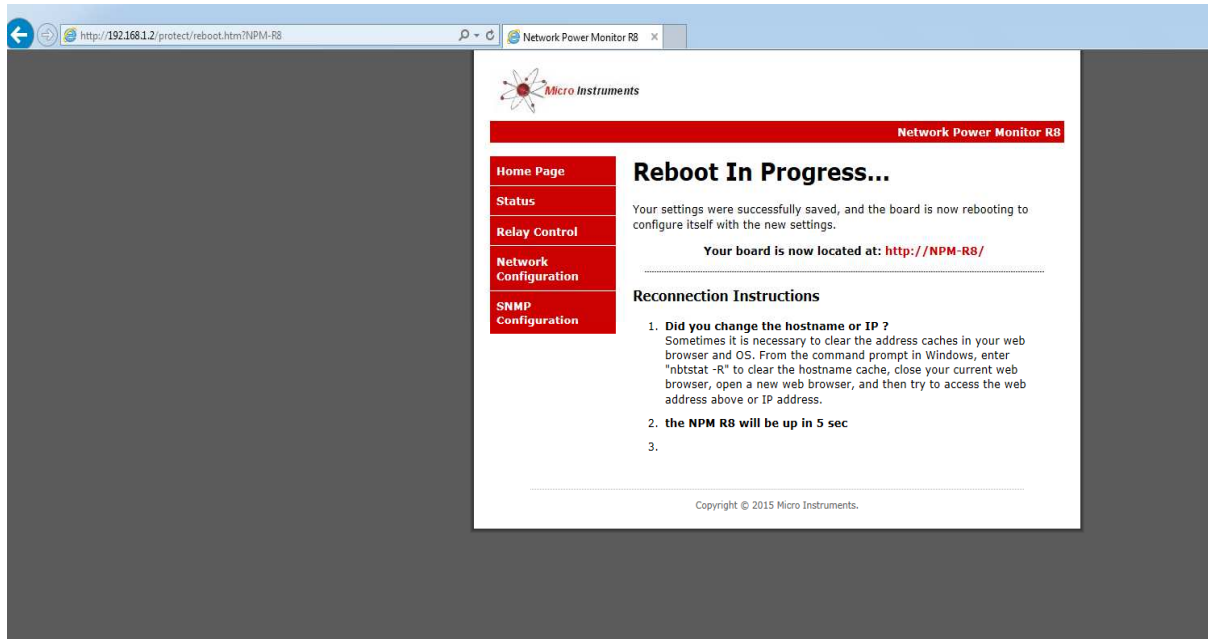
Admin and microi gains access

MAC address is displayed and cannot be changed

Setup IP address, Gateway and Subnet Mask

Primary DNS and Secondary DNS is not functional and is reserved for future use.

Save Config



After the configuration was saved the “ Reboot in Progress” page will load

The unit will reboot and configure and should be live in about 5 seconds

9 SNMP Configuration

The screenshot shows a web browser window with the address bar displaying `http://192.168.1.2/snmpconfig.htm`. The page title is "Network Power Monitor R8". The interface features a red sidebar with navigation links: "Home Page", "Status", "Relay Control", "Network Configuration", and "SNMP Configuration". The main content area is titled "SNMP Community Configuration" and includes a sub-header "Read/Write Community String configuration for SNMPv2c Agent." Below this, a descriptive text states: "Configure multiple community names if you want the SNMP agent to respond to the NMS/SNMP manager with different read and write community names. If less than three communities are needed, leave extra fields blank to disable them." The configuration form contains six input fields: "Read Comm1" (public), "Read Comm2" (read), "Read Comm3" (blank), "Write Comm1" (private), "Write Comm2" (write), and "Write Comm3" (public). A "Save Config" button is located at the bottom of the form. The footer of the page reads "Copyright © 2015 Micro Instruments."

Admin and microi gains access.

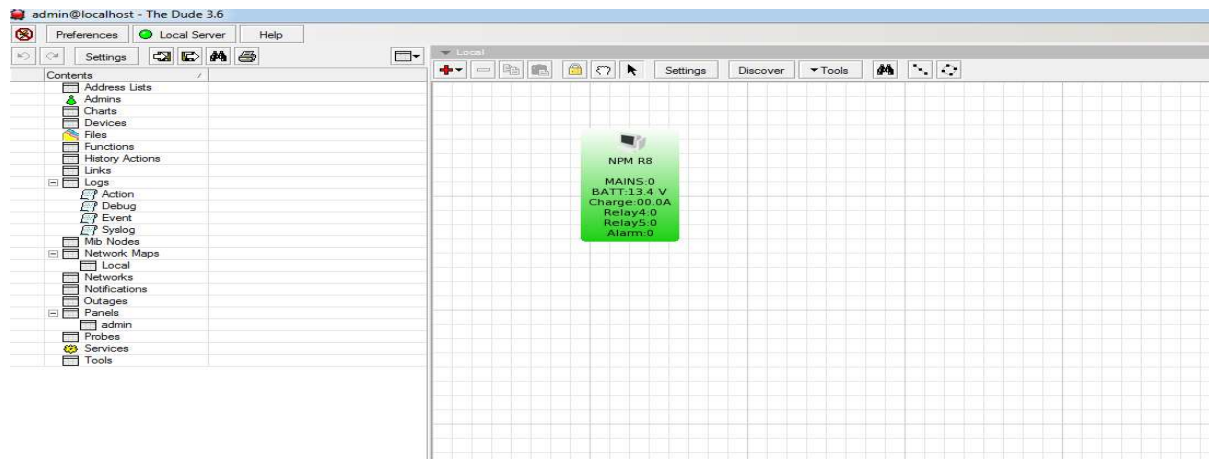
Configure read and write communities

Write communities is functional on the device via SNMP SET and GET functions but is beyond the scope of this user manual as the relay's can also be controlled via the relay control page.

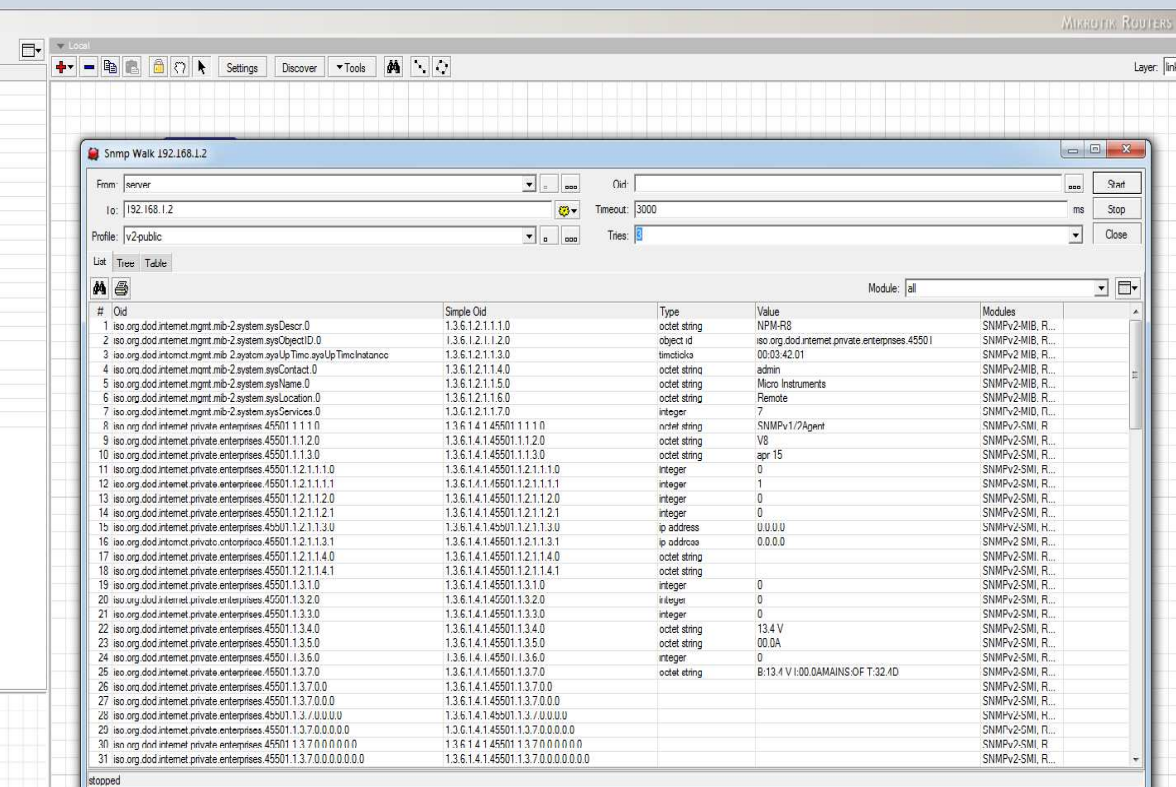
NETWORK POWER MONITOR R9 / NPM-R9

SNMP+TFTP
+ GSM

SNMP screenshot from “the dude” freeware SNMP manager



SNMP V2c /SNMP walk screenshot



The screenshot shows the 'Snmp Walk' application window. The 'From' field is set to 'server', the 'To' field is '192.168.1.2', and the 'Profile' is 'v2-public'. The 'Timeout' is 3000 ms and 'Tries' is 5. The 'Module' is set to 'all'. The table below displays the results of the SNMP walk.

#	OID	Simple OID	Type	Value	Modules
1	iso.org.dod.internet.mgmt.mib-2.system.sysDescr.0	1.3.6.1.2.1.1.1.0	octet string	NPM-R8	SNMPv2-MIB, R...
2	iso.org.dod.internet.mgmt.mib-2.system.sysObjectID.0	1.3.6.1.2.1.1.2.0	object id	iso.org.dod.internet.private.enterprises.45501	SNMPv2-MIB, R...
3	iso.org.dod.internet.mgmt.mib-2.system.sysUpTime.0	1.3.6.1.2.1.1.3.0	timeticks	00:03:42.01	SNMPv2-MIB, R...
4	iso.org.dod.internet.mgmt.mib-2.system.sysContact.0	1.3.6.1.2.1.1.4.0	octet string	admin	SNMPv2-MIB, R...
5	iso.org.dod.internet.mgmt.mib-2.system.sysName.0	1.3.6.1.2.1.1.5.0	octet string	Micro Instruments	SNMPv2-MIB, R...
6	iso.org.dod.internet.mgmt.mib-2.system.sysLocation.0	1.3.6.1.2.1.1.6.0	octet string	Remote	SNMPv2-MIB, R...
7	iso.org.dod.internet.private.enterprises.45501.1.1.1.0	1.3.6.1.4.1.45501.1.1.1.0	integer	7	SNMPv2-SMI, R...
8	iso.org.dod.internet.private.enterprises.45501.1.1.1.1.0	1.3.6.1.4.1.45501.1.1.1.1.0	integer	SNMPv1/2Agent	SNMPv2-SMI, R...
9	iso.org.dod.internet.private.enterprises.45501.1.1.2.0	1.3.6.1.4.1.45501.1.1.2.0	octet string	V8	SNMPv2-SMI, R...
10	iso.org.dod.internet.private.enterprises.45501.1.1.3.0	1.3.6.1.4.1.45501.1.1.3.0	octet string	apr 15	SNMPv2-SMI, R...
11	iso.org.dod.internet.private.enterprises.45501.1.2.1.1.1.0	1.3.6.1.4.1.45501.1.2.1.1.1.0	integer	0	SNMPv2-SMI, R...
12	iso.org.dod.internet.private.enterprises.45501.1.2.1.1.1.1	1.3.6.1.4.1.45501.1.2.1.1.1.1	integer	1	SNMPv2-SMI, R...
13	iso.org.dod.internet.private.enterprises.45501.1.2.1.1.2.0	1.3.6.1.4.1.45501.1.2.1.1.2.0	integer	0	SNMPv2-SMI, R...
14	iso.org.dod.internet.private.enterprises.45501.1.2.1.1.2.1	1.3.6.1.4.1.45501.1.2.1.1.2.1	integer	0	SNMPv2-SMI, R...
15	iso.org.dod.internet.private.enterprises.45501.1.2.1.1.3.0	1.3.6.1.4.1.45501.1.2.1.1.3.0	ip address	0.0.0.0	SNMPv2-SMI, R...
16	iso.org.dod.internet.private.enterprises.45501.1.2.1.1.3.1	1.3.6.1.4.1.45501.1.2.1.1.3.1	ip address	0.0.0.0	SNMPv2-SMI, R...
17	iso.org.dod.internet.private.enterprises.45501.1.2.1.1.4.0	1.3.6.1.4.1.45501.1.2.1.1.4.0	octet string		SNMPv2-SMI, R...
18	iso.org.dod.internet.private.enterprises.45501.1.2.1.1.4.1	1.3.6.1.4.1.45501.1.2.1.1.4.1	octet string		SNMPv2-SMI, R...
19	iso.org.dod.internet.private.enterprises.45501.1.3.1.0	1.3.6.1.4.1.45501.1.3.1.0	integer	0	SNMPv2-SMI, R...
20	iso.org.dod.internet.private.enterprises.45501.1.3.2.0	1.3.6.1.4.1.45501.1.3.2.0	integer	0	SNMPv2-SMI, R...
21	iso.org.dod.internet.private.enterprises.45501.1.3.3.0	1.3.6.1.4.1.45501.1.3.3.0	integer	0	SNMPv2-SMI, R...
22	iso.org.dod.internet.private.enterprises.45501.1.3.4.0	1.3.6.1.4.1.45501.1.3.4.0	octet string	13.4 V	SNMPv2-SMI, R...
23	iso.org.dod.internet.private.enterprises.45501.1.3.5.0	1.3.6.1.4.1.45501.1.3.5.0	octet string	00.0A	SNMPv2-SMI, R...
24	iso.org.dod.internet.private.enterprises.45501.1.3.6.0	1.3.6.1.4.1.45501.1.3.6.0	integer	0	SNMPv2-SMI, R...
25	iso.org.dod.internet.private.enterprises.45501.1.3.7.0	1.3.6.1.4.1.45501.1.3.7.0	octet string	B:13.4 V I:0.00A MAINS OF T:32.4D	SNMPv2-SMI, R...
26	iso.org.dod.internet.private.enterprises.45501.1.3.7.0.0	1.3.6.1.4.1.45501.1.3.7.0.0	octet string		SNMPv2-SMI, R...
27	iso.org.dod.internet.private.enterprises.45501.1.3.7.0.0.0	1.3.6.1.4.1.45501.1.3.7.0.0.0	octet string		SNMPv2-SMI, R...
28	iso.org.dod.internet.private.enterprises.45501.1.3.7.0.0.0.0	1.3.6.1.4.1.45501.1.3.7.0.0.0.0	octet string		SNMPv2-SMI, R...
29	iso.org.dod.internet.private.enterprises.45501.1.3.7.0.0.0.0.0	1.3.6.1.4.1.45501.1.3.7.0.0.0.0.0	octet string		SNMPv2-SMI, R...
30	iso.org.dod.internet.private.enterprises.45501.1.3.7.0.0.0.0.0.0	1.3.6.1.4.1.45501.1.3.7.0.0.0.0.0.0	octet string		SNMPv2-SMI, R...
31	iso.org.dod.internet.private.enterprises.45501.1.3.7.0.0.0.0.0.0.0	1.3.6.1.4.1.45501.1.3.7.0.0.0.0.0.0.0	octet string		SNMPv2-SMI, R...

OID table / number of services = 10

45501.1.3.1.0 = Relay 4 status (integer) 0 off / 1 on

45501.1.3.2.0 = Relay 5 status (integer) 0 off/1 on

45501.1.3.3.0 =Mains status (integer) 0 off / 1 on

45501.1.3.4.0 = Battery voltage (octet string)

45501.1.3.5.0 = Charge current (octet string)

45501.1.3.6.0 = External Temperature sensor (octet string)

45501.1.3.7.0 = External DC Volts V1 (octet string)

45501.1.3.8.0 = LOAD Current to equipment (octet string)

45501.1.3.9.0 = Alarm status (integer) 0 off/ 1 on or active

45501.1.3.10.0 = LCD display text string (octet string)

To add a device to the Dude and add all settings

In the top screen Click on **+** and click on device to add a device, enter the device IP and click next and finish , right click on the device icon, select appearance in the drop down menu, double click in the Label: window and copy and paste the code below to the label window.

[Device.Name]

[device_performance()][Device.ServicesDown]

****copy it in below the above text that appears automatically****

MAINS:[oid("1.3.6.1.4.1.45501.1.3.3.0")]

BATT:[oid("1.3.6.1.4.1.45501.1.3.4.0")]

Charge i:[oid("1.3.6.1.4.1.45501.1.3.5.0")]

Relay4:[oid("1.3.6.1.4.1.45501.1.3.1.0")]

Relay5:[oid("1.3.6.1.4.1.45501.1.3.2.0")]

Temp:[oid("1.3.6.1.4.1.45501.1.3.6.0")]

EXTV1:[oid("1.3.6.1.4.1.45501.1.3.7.0")]

LOAD i:[oid("1.3.6.1.4.1.45501.1.3.8.0")]

Alarm:[oid("1.3.6.1.4.1.45501.1.3.9.0")]

Select label refresh value to 5 or 10sec

Click on arrow next to up (**green**) partially down(**orange**) and down(**Red**) to display colours

Click apply and OK

Right click the new created icon again and select settings

Give a Name to the unit that makes sense to the user and select SNMP profile as V2 public

Go to polling and select your probe interval and Probe timeout time

Click on apply

Under services click the + sign

Under **Probe**: select ping and apply and ok

At this time the Icon for the device should be Green and indicating all values.

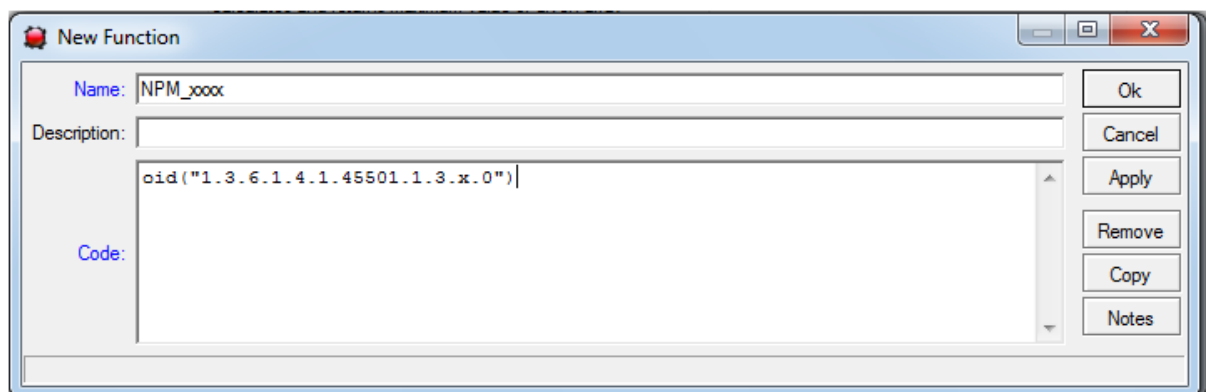
Add a probe and function to the dude for Mains failure

To be notified by the Dude for a change in mains status or alarm add a function and a probe

In the right hand side navigation window of the Dude double click Functions

Click the + sign to add a function

Type the Name as **NPM_Mains**



Copy and paste the text below as above (note the OID is the Mains OID)

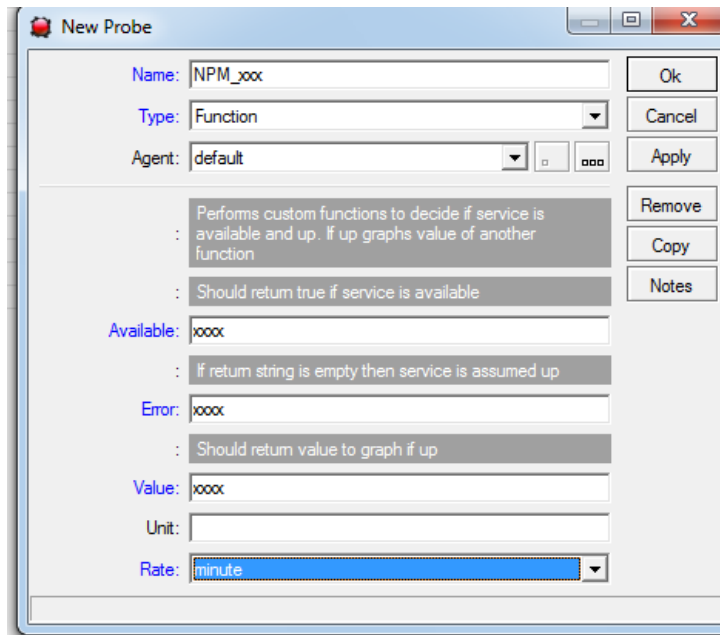
```
oid("1.3.6.1.4.1.45501.1.3.3.0")
```

Click apply and ok

In the right hand side navigation window of the Dude double click Probes

Click the + sign to add a Probe

Under Probes create a new probe:



Type the name exactly as the function created earlier - : **NPM_Mains**

Change Type to : **Function**

Agent: **default**

Copy and paste the text below one by one and insert

Available: NPM_Mains()

Error: if(NPM_Mains()!=1, "", "Mians OFF")

Value: NPM_Mains()

Leave **Unit** blank

Rate: **minute**

Click Apply and ok

Right click the device icon on the monitoring screen and select “ **Settings**”

Go To **services**

Click the + sign to add a service

Under **Probe**: select - **NPM_Mains**

Select the probe interval and probe timeout time and set the Probe down count to 1

Click apply and ok to exit

At this time switching the Mains power off to the unit will result in the monitoring Icon in the Dude to turn Orange and indicate at the top of the icon that it is a Mains failure that occurred.

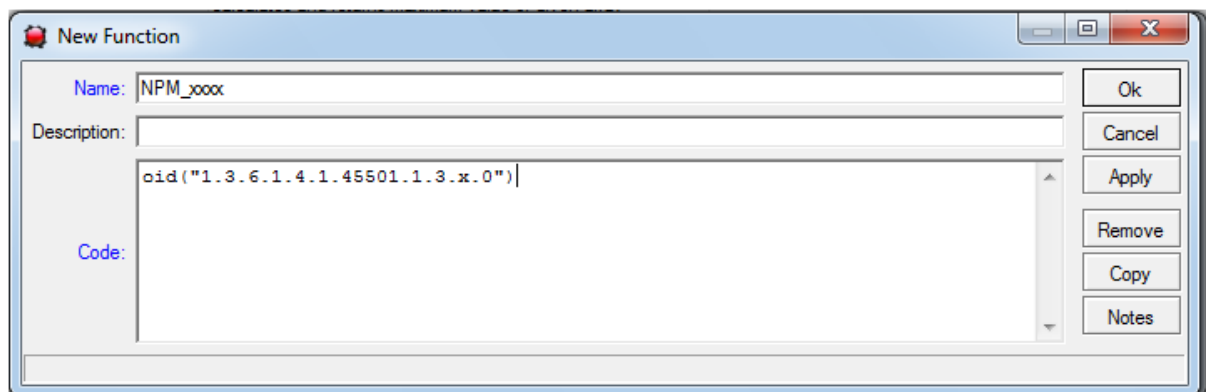
Add a probe and function to the dude for ALARM failure

To be notified by the Dude for a change in alarm status add a function and a probe

In the right hand side navigation window of the Dude double click Functions

Click the + sign to add a function

Type the Name as **NPM_Alarm**



Copy and paste the text below as above (note the OID is the ALARM OID)

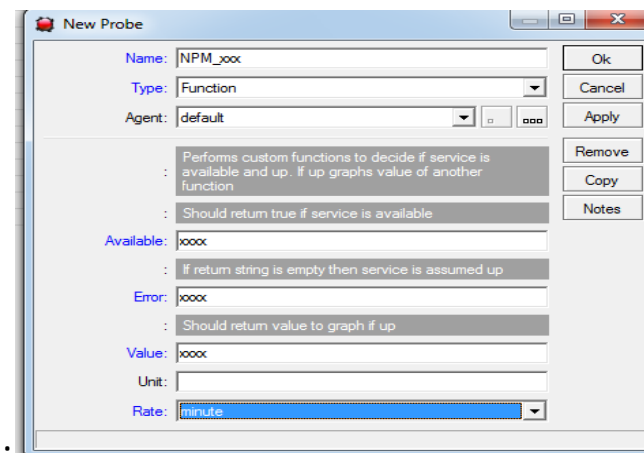
```
oid("1.3.6.1.4.1.45501.1.3.9.0")
```

Click apply and ok

In the right hand side navigation window of the Dude double click Probes

Click the + sign to add a Probe

Under Probes create a new probe



Type the name exactly as the function created earlier - : **NPM_Alarm**

Change Type to : **Function**

Agent: **default**

Copy and paste the text below one by one and insert

Available: NPM_Alarm()

Error: if(NPM_Alarm()=0 , "", "Alarm OFF")

Value: NPM_Alarm()

Leave **Unit** blank

Rate: **minute**

Click Apply and ok

Right click the device icon on the monitoring screen and select “ **Settings**”

Go To **services**

Click the **+** sign to add a service

Under **Probe**: select - **NPM_Alarm**

Select the probe interval and probe timeout time and set the Probe down count to **1**

Click apply and ok to exit

At this time Activating the Alarm input to the unit will result in the monitoring Icon in the Dude to turn Orange and indicate at the top of the icon that it is a active Alarm that occurred.

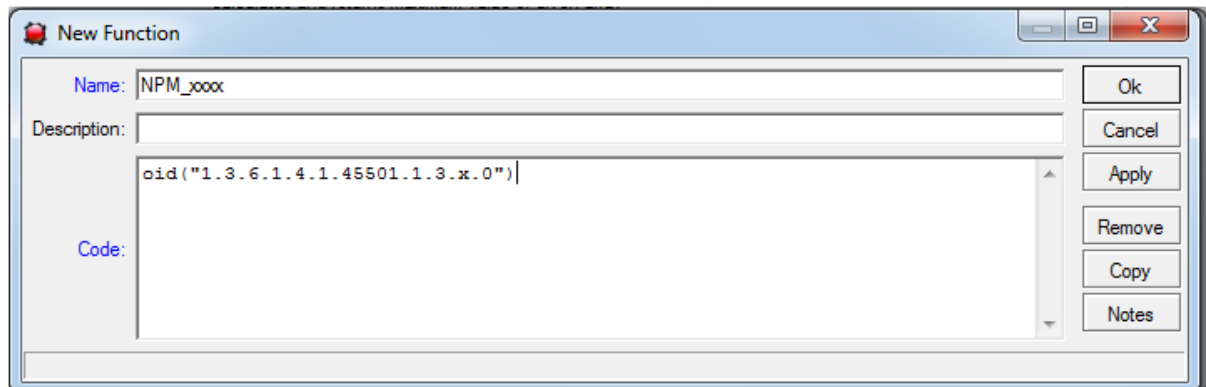
Add a probe and function to the dude for low Battery Voltage

To be notified by the Dude for a change in low Battery status add a function and a probe

In the right hand side navigation window of the Dude double click Functions

Click the + sign to add a function

Type the Name as **NPM_Volts**



Copy and paste the text below as above (note the OID is the Battery voltage OID)

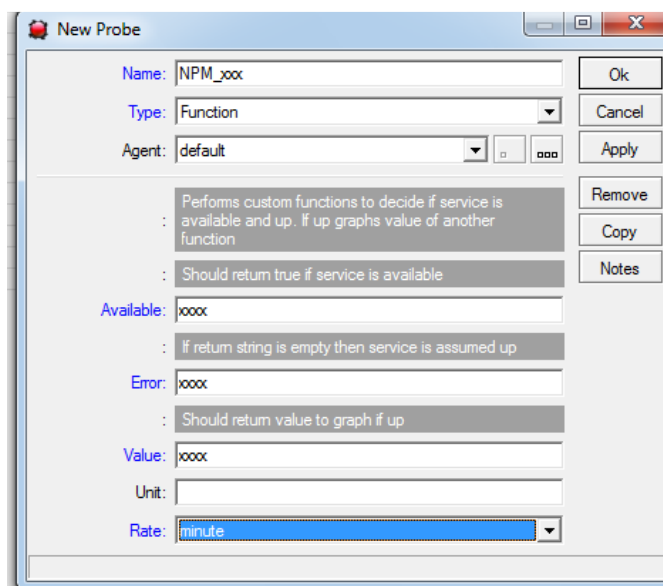
```
oid("1.3.6.1.4.1.45501.1.3.4.0")
```

Click apply and ok

In the right hand side navigation window of the Dude double click Probes

Click the + sign to add a Probe

Under Probes create a new probe:



Type the name exactly as the function created earlier - : **NPM_Volts**

Change Type to : **Function**

Agent: **default**

Copy and paste the text below one by one and insert

Available: NPM_Volts()

Error: if(NPM_Volts() > 11.5, "", "BATT LOW")

YOU can change your battery low level in decimal , currently at 11.5V

Value: NPM_Volts()

Leave **Unit** blank

Rate: **minute**

Click Apply and ok

Right click the device icon on the monitoring screen and select “ **Settings**”

Go To **services**

Click the + sign to add a service

Under **Probe**: select - **NPM_Volts**

Select the probe interval and probe timeout time and set the Probe down count to 1

Click apply and ok to exit / At this time lowering the Battery input voltage to the unit will result in the monitoring Icon in the Dude to turn Orange and indicate at the top of the icon that it is a low battery condition.

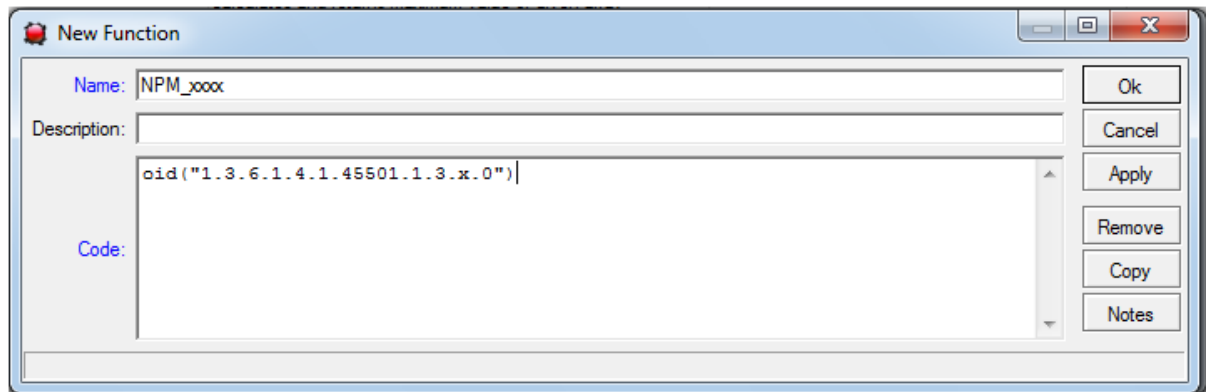
Add a probe and function to the dude for Charge Current

To be able to Graph the charge current

In the right hand side navigation window of the Dude double click Functions

Click the + sign to add a function

Type the Name as **NPM_Charge**



Copy and paste the text below as above (note the OID is the Charge current OID)

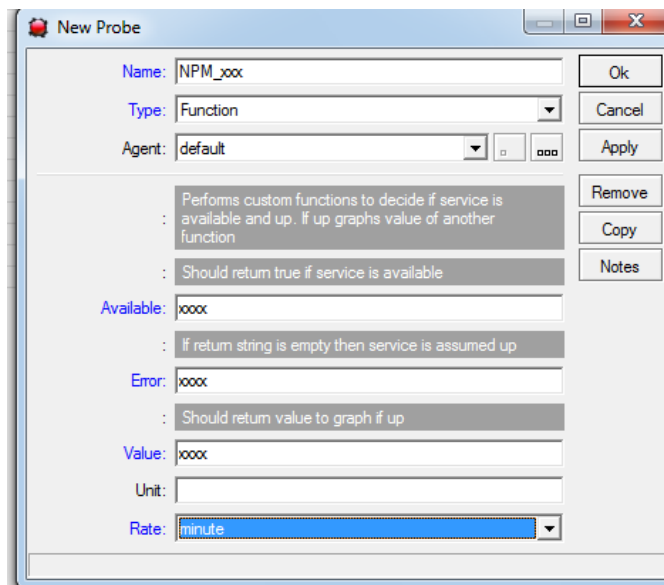
```
oid("1.3.6.1.4.1.45501.1.3.5.0")
```

Click apply and ok

In the right hand side navigation window of the Dude double click Probes

Click the + sign to add a Probe

Under Probes create a new probe:



Type the name exactly as the function created earlier - : **NPM_Amps**

Change Type to : **Function**

Agent: **default**

Copy and paste the text below one by one and insert

Available: NPM_Amps()

Error: `if(NPM_Amps(), "", "")`

Value: `NPM_Amps()`

Leave **Unit** blank

Rate: **minute**

Click Apply and ok

Right click the device icon on the monitoring screen and select “**Settings**”

Go To **services**

Click the **+** sign to add a service

Under **Probe**: select - **NPM_Amps**

Select the probe interval and probe timeout time and set the Probe down count to 1

Click apply and ok to exit / At this time we don't have an alarm on charge current but no it will Graph the charge data in your graph – it is possible to add a charge alarm - follow the low battery voltage alarm setup for the Charge amps to do create an alarm.

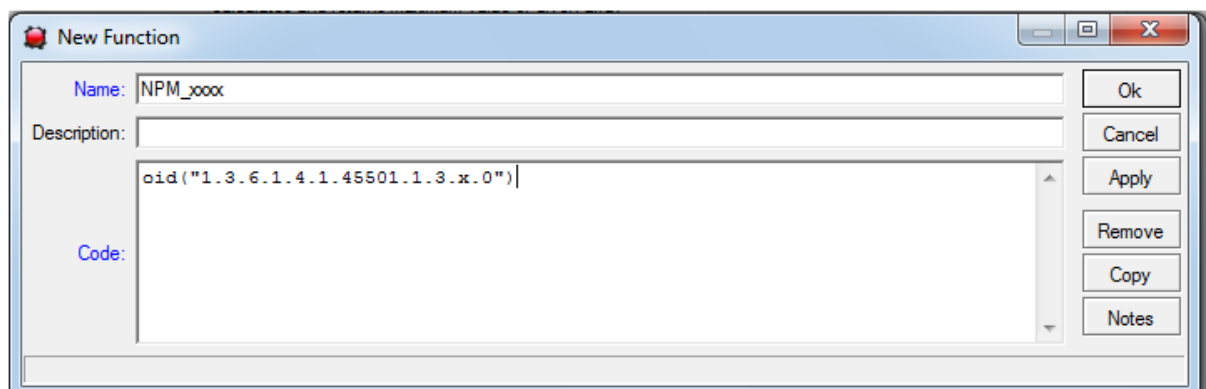
Add a probe and function to the dude for Over Temperature

To be notified by the DUDE of a Over temperature alarm.

In the right hand side navigation window of the Dude double click Functions

Click the **+** sign to add a function

Type the Name as **NPM_Temp**



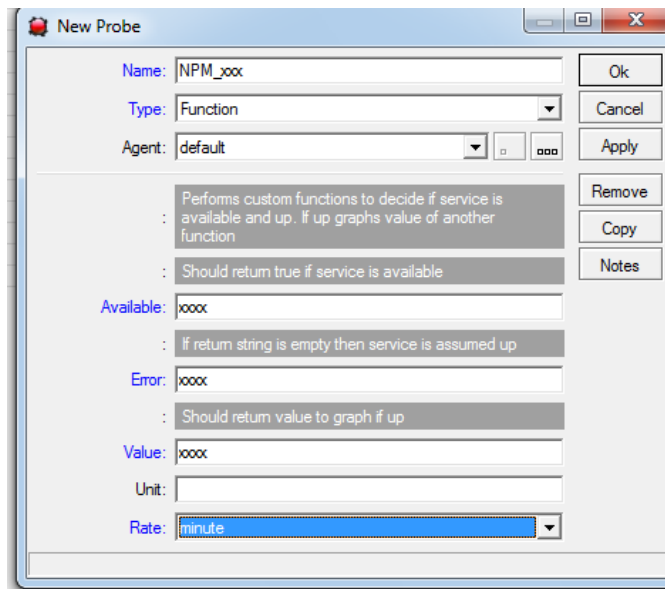
Copy and paste the text below as above (note the OID is the Temperature OID)

`oid("1.3.6.1.4.1.45501.1.3.6.0")`

In the right hand side navigation window of the Dude double click Probes

Click the **+** sign to add a Probe

Under Probes create a new probe:



Type the name exactly as the function created earlier - : **NPM_Temp**

Change Type to : **Function**

Agent: **default**

Copy and paste the text below one by one and insert

Available: **NPM_Temp()**

Error: **if(NPM_Temp() < 40.0, "", "Over Temp")**

CURRENTLY SET AT 40 deg C – you can change the value

Value: **NPM_Temp()**

Leave **Unit** blank

Rate: **minute**

Click Apply and ok

Right click the device icon on the monitoring screen and select “ **Settings**”

Go To **services**

Click the **+** sign to add a service

Under **Probe**: select - **NPM_Temp**

Select the probe interval and probe timeout time and set the Probe down count to 1

Click **apply** and **ok to exit** / At this time the Icon will turn orange in case of a Over Temperature situation.

CREATE the Graphs in the DUDE

Right hand top left menu click on Charts

Click on the **+** sign to add a chart

Give the Chart a name that make sense to the user

Click on the **+** sign below to add services to the Dude

Select **source** in the window that have opened and select for instance the

NPM_Volts@ NPM as the source

Click on **apply** and **ok**

***** If you get a Error message “ Unknown type” then please close the window to return to the previous window of Charts and Remove the Chart – you will be prompted with “Remove this Chart . Yes or No” Click yes to remove it , then click on the undo button top left corner of the dude screen to undo the Chart delete , you can now go back to the Chart and add the required data sources for Graphing to it**

******* This is a Dude problem with V 3.6 *******

After all chart data sources was added like NPM_Volts@NPM and NPM_Amps@NPM the graphing of your voltage and charge current etc will start. You can add the temperature , mains status whatever you want to the graph

The scaling of the graphs might appear wrongly between a scale of 0 to 1 , after about 20min the graphing will be scaled between data received from unit.

SETTING UP EMAIL NOTIFICATIONS IN THE DUDE

Top left on screen click on **SETTINGS**

Add your Primary DNS address

Add your Primary SMTP address

Add your email address of this server

Click Apply and OK

Go to Notifications in the left tree menu

Select email by double click or add email if not present

In the email window add your To: email address and click test

If successful “ OK “ will appear in the bottom of the email window

Right click on the NPM icon on the local map(monitors screen)

Go to services

Double click on the service you would like to receive an email from

Tick (enable) [use notifications](#) and select email in the list

Click apply

Also double check :

Right click NPM icon , go to settings , under [Polling tab](#) make sure [use notifications](#) an [email](#) is selected

10. TFTP Boot-loader

NPM-R9 supports **TFTP** Boot-loader for upgrading device software remotely over a network.

The MAC address of the unit is hard coded into software for safety reasons so first obtain a .hex file from us for the specific unit.

Send e-mail to info@microinstruments.co.za , state **serial number** of unit (displayed on home page via web browser) and the **type of unit** **eg: NPM R8** , and the fault detected in software or why you need the software modified.

We will then send you a .hex file with the appropriate MAC address to be uploaded.

Simply download the **Mi – TFTP file up-loader** from our website

The Mi-TFTP file up-loader automatically insert the TFTP commands needed to communicate with the target device and is transparent to the user making it easier to use TFTP.

Run the program – Enter the device IP address, browse for the .hex file location and click on “UPLOAD” – you will be notified upon successful data transfer. The unit will re-program itself and re-boot with the new software and changes.

Security has been added if the connection is lost while uploading to the unit it will ignore the TFTP session.